

**Initial Report of the
NH Tidal Energy Commission
(HB 694, Chapter 222, Laws of 2007)
November 2007**

On June 25, 2007 Governor Lynch signed HB 694 (Chapter 222, Laws of 2007) establishing a Commission to study the feasibility of tidal power generation under the Little Bay and General Sullivan Bridges, located in Dover and Newington. The Commission's primary duty is to identify and collect technical and sociological data, and investigate the regulatory requirements necessary to determine the feasibility of building a system for tidal power generation under the bridges. The Commission is comprised of 21 members, including members of the New Hampshire House of Representatives and Senate, the Department of Environmental Services, the Office of Energy and Planning, the Department of Transportation, the Public Utilities Commission, the Fish and Game Department, the Pease Development Authority – Division of Ports and Harbors, the Office of Consumer Advocate, the New Hampshire Estuaries Project, the City of Dover, the Town of Newington, the University of New Hampshire, the New Hampshire Commercial Fishermen's Association, the National Marine Fisheries Service, environmental protection and advocacy organizations, and the general public. The Commission is required to make an initial report of its findings and any recommendations for proposed legislation on or before November 1, 2007, and make a final report on or before November 1, 2008. This document represents the initial report of the Commission.

At its inaugural meeting on August 29, 2007 the Commission elected co-chairs, State Representative Thomas Fargo, representing the City of Dover, and Dr. Kenneth Baldwin, representing the University of New Hampshire, as well as a vice chair, Ted Diers, representing the Department of Environmental Services Coastal Program. The Commission also selected the Coastal Program as the lead state agency to coordinate the efforts of the Commission. Information gathered by the Commission and summaries of the Commission's meetings are available on the NHDES Coastal Program website:

https://www.des.state.nh.us/Coastal/ocean_policy.html

A list of Commission members and their contact information is also available on the above-referenced website and is attached to this document as Appendix A. This list also includes non Commission members who have expressed an interest in participating in the activities of the Commission.

The Commission will generally hold monthly meetings that are open to the general public. Meeting dates and locations are updated periodically on the NH General Court website:

<http://www.gencourt.state.nh.us/ie/>

As outlined in HB 694, the goal of the Commission is to: "study the feasibility of tidal power generation under the Little Bay and General Sullivan Bridges, in Dover." To achieve this goal the Commission is gathering data concerning the technical, economical, environmental, and sociological parameters pertinent to this goal.

At its September 20, 2007 meeting, the Commission established four (4) subcommittees for the purpose of facilitating its business. The subcommittees, formed by the Commission, are to address the following:

1. Permitting Requirements
2. Public and Business Community Outreach
3. Wildlife and Environmental Impact Assessment
4. Technical Feasibility, Cost & Benefit Analysis.

Initial members of these subcommittees were identified either by expressing interest in each topic area or for their individual expertise. An evolving work plan will be established at each subcommittee's first meetings. Subcommittees are to work independently and report their findings to the full Committee at monthly meetings. As of the time of this report, the composition of the subcommittees is outlined below:

NH Tidal Energy Commission Subcommittees

* - indicates Subcommittee Chairperson

Permitting Requirements Subcommittee

* Chris Williams

Jack Pare

Craig Yankes

Ken Baldwin

Jack Ruderman

Chris Waszczuk

Ted Diers

Public and Business Community Outreach Subcommittee

* Kathleen Lewis

Cynthia Copeland

Eric Steltzer

Ken Baldwin

Erik Anderson

Rep. Roland Hofemann

Environmental and Wildlife Impact Assessment Subcommittee

* Peter Wellenberger

Ken Baldwin

Rep. Marcia Moody

David Funk

Dave Kellam

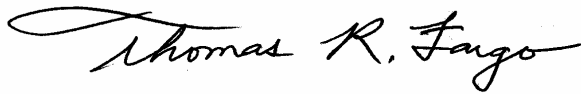
Technical Feasibility, Cost & Benefits Analysis Subcommittee

* Ken Baldwin
Mike Harrington
Otis Perry
Nancy Borden
Brian Giles
Jack Pare

An annotated draft work plan for the four subcommittees is attached as Appendix B.

This Initial Report is submitted on behalf of the NH Tidal Energy Commission to the Speaker of the House of Representatives, the President of the Senate, the House Clerk, the Senate Clerk, the Governor, and the State Library.

November 2007

A handwritten signature in black ink that reads "Thomas R. Fargo". The signature is written in a cursive style with a large, flowing initial 'T'.

Rep. Thomas Fargo
Co-Chairman

Dr. Kenneth Baldwin
Co-Chairman

Appendix A

HB 694 Commission Contact Information

A. House of Representatives

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I. NH Estuaries Project

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Q. Office of Consumer Advocate

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Appendix B

DRAFT NH Tidal Energy Subcommittee Work Plan November 2007

Permitting Requirements Subcommittee:

Annotated to include list of applicable laws and regulations *

Local & Regional: **Dover and Newington Planning Boards- RSA 674:54**

<http://www.gencourt.state.nh.us/rsa/html/LXIV/674/674-54.htm>

Strafford and Rockingham Regional Planning Commissions-RSA 36:54-57

<http://www.gencourt.state.nh.us/rsa/html/III/36/36-mrg.htm>

State Agencies: **NH Site Evaluation Committee – RSA 162-H**

<http://www.gencourt.state.nh.us/rsa/html/XII/162-H/162-H-mrg.htm>

<http://nhsec.state.nh.us/site100.htm>

NH Department of Transportation – Utility Accommodation Manual

<http://www.nh.gov/dot/bureaus/highwaydesign/documents/UtilityAccommodationManual.pdf>

NH Department of Environmental Services

- Coastal Zone Management - Federal Consistency (includes Maine?)

<https://www.des.state.nh.us/Coastal/documents/ConsistencyGuide2007.2a.pdf>

- Wetlands – **RSA 482-A**

<http://www.gencourt.state.nh.us/rsa/html/NHTOC/NHTOC-L-482-A.htm>

<https://www.des.state.nh.us/rules/env-wt100-800.pdf>

- Shoreland – **RSA 483-B**

<http://www.gencourt.state.nh.us/rsa/html/nhtoc/nhtoc-l-483-b.htm>

<https://www.des.state.nh.us/rules/env-wq1400.pdf>

- Alteration of Terrain (on-land facilities) – **RSA 485-A:17**

<http://www.gencourt.state.nh.us/rsa/html/L/485-A/485-A-17.htm>

https://www.des.state.nh.us/rules/env-ws_415.pdf

- Waste Management Division (regulates petroleum - possible use as lubrication or hydraulic fluid) works with “Piscataqua Cooperative”

<https://www.des.state.nh.us/rules/envwm1402.pdf>

- Clean Water Act 401 Certification

<https://www.des.state.nh.us/WMB/Section401/reviewProcess.html>

NH Fish & Game – RSA 212-A Endangered Species, and RSA 213

Atlantic Marine Fisheries (& others?)

<http://www.gencourt.state.nh.us/rsa/html/NHTOC/NHTOC-XVIII-212-A.htm>

<http://www.gencourt.state.nh.us/rsa/html/NHTOC/NHTOC-XVIII-213.htm>

NH Public Utilities Commission - RSA 371:17

<http://www.gencourt.state.nh.us/rsa/html/XXXIV/371/371-17.htm>

NH Division of Historic Resources – Section 106 US National Historic Preservation Act

<http://www.nh.gov/nhdhr/review/106intro.html>

Federal Agencies: **US Coast Guard** – Navigation Regulations

http://www.navcen.uscg.gov/mwv/navrules/rotr_online.htm

US Army Corps of Engineers - CWA Sections 401 & 404 (and others ?)

<http://www.usace.army.mil/cw/cecwo/reg/sadmin3.htm>

US Environmental Protection Agency - CWA Sections 401 & 404 (others ?)

<http://www.epa.gov/region5/water/cwa.htm>

National Oceanic and Atmospheric Administration (NOAA)

- National Marine Fisheries Service

<http://www.nmfs.noaa.gov/regulations.htm>

<http://www.nmfs.noaa.gov/regulationspermits.htm>

- National Estuarine Research Reserve

http://nerrs.noaa.gov/Regulations/921_13.html

Department of Interior

- US Fish & Wildlife Service; Essential Fish Habitat Project (?)

<http://www.fws.gov/permits/>

http://www.fws.gov/northeast/gulfofmaine/projects/habitat_analysis.htm

- Mineral Management Service

<http://www.mms.gov/offshore/EnvironmentalCompliance.htm>

Federal Energy Regulatory Commission; Hydrokinetic Energy Licenses

<http://ferc.gov/industries/hydropower/enviro.asp>

<http://ferc.gov/industries/hydropower/indus-act/hydrokinetics.asp>

Public and Business Communities Outreach Subcommittee

Strategies and approaches discussed:*

- Commission should coordinate outreach with upcoming UNH forum on renewable energy and Rockingham Planning Commission efforts (website surveys?)
- Model efforts after Cape Wind Project, avoid negatives, build on positive outreach aspects of that project. Focus on tidal power as one of several renewable energy sources.
- Coordinate with Great Bay Estuarine Research Reserve (NOAA), UNH Cooperative Extension (Sea Grant?) and NH Estuaries Project, Chambers of Commerce activities.
- Assess market value of a tidal energy project.
- Would like to conduct survey or conduct charette but Commission has no budget. Survey to focus on interviews of stakeholders; commercial fishermen & lobstermen, recreational users of the tidal waters.
- Conduct a public hearing when findings/final report is approximately 70% complete.
- Key questions that need to be answered before assessing the public's and business leader's attitudes:
 - What will the turbines and associated installed components look like?
 - Who benefits from the project? Corporations or utility customers?
 - How much energy will envisioned tidal projects produce?
 - Who are the key players (stakeholders)?

Wildlife and Environmental Impact Assessment Subcommittee

This Subcommittee's areas of assessment parallel many of the Permitting Requirements Subcommittee's issues listed above. This Subcommittee's work may follow the work of others. Strategies and approaches discussed:*

- Inventory wildlife and environmental assessments already completed: NH Dept. of Transportation - Spaulding Turnpike Newington-Dover Project Draft EIS, see Chapter 3: <http://www.newington-dover.com/deis.shtml> ; The Nature Conservancy (?); others?
- What are the critical resources to be protected in the area of the project.
- Other issues to be considered:
 - Assess wildlife habitats, breeding areas, birds, fish
 - Blocking factor of turbines
 - Amount of energy extracted & effects on down stream flow/sites
 - Local impacts of turbines due to flow acceleration, sedimentation, water quality, temperature
 - Seabed erosion / foundations
 - Navigational risks
 - Machinery noise

Technical Feasibility, Cost & Benefits Analysis Subcommittee

This Subcommittee will assess:*

- How much energy could be harnessed under the bridges (megawatts)? What is available from tidal prism? With turbine efficiency flow restriction considerations, how much generation is feasible?
- What type of entity would build the facility? Merchant power company or regulated utility? Municipal government or regional municipal cooperative?
- Can or should the State and municipalities charge fees or tax on the generating facilities and/or power produced? How are run-of-river hydroelectric facilities taxed?
- Can the State lease or charge rental fees for attachments to state infrastructure? How much is this worth?
- Does the State have the authority to lease submerged lands similar to aquaculture leasing model?
- What is the effect of the Renewable Portfolio Standards Law (RSA 362-F) <http://www.gencourt.state.nh.us/rsa/html/XXXIV/362-F/362-F-mrg.htm> in establishing incentives for tidal power generation? Is there a potential to use Alternative Compliance Payments, set forth in the RSA 362-F, to develop the project? What is the amount of avoided carbon emissions for the project relative to potential carbon credits as anticipated in the proposed Regional Greenhouse Gas Initiative (RGGI) legislation.
- Other issues to be considered:
 - Site research
 - Site preparation

- Logistics
- How much energy extracted per dollar invested
- Installation cost
- Maintenance cost
- Replacement cost

* It is anticipated that these lists will grow or shrink as the Commission discusses these issues more carefully and thoroughly.